

**Remarks**

Support for the above-requested amendments to claim 1 is found at least at page 2, lines 5-10 and 17-25; page 5, lines 21-25; page 6, lines 20-30; and page 7, lines 5-7. Claim 4 has been amended to remove the recitation of the molecular weight of the film former. Claim 8 has been amended to correct an inadvertent typographical error. Claims 19-25 have been canceled without prejudice. No question of new matter arises and entry of the above-requested amendments is respectfully requested.

Claims 1-18 are before the Examiner for consideration.

**Rejection under 35 U.S.C. §112, second paragraph**

Claim 4 has been rejected under 35 U.S.C. §112, second paragraph as being indefinite. In particular, the Examiner asserts that claim 4 recites a molecular weight for the polymer but does not state whether the weight is in terms of weight average or number average molecular weight. The Examiner concludes that because weight average and number average molecular weights can differ substantially claim 4 is indefinite.

In response to this rejection, Applicant has removed the recitation of the molecular weight of the film former from claim 4. As amended, Applicant submits that claim 4 is sufficiently definite. Accordingly, it is respectfully requested that the Examiner reconsider and withdraw this rejection.

**Rejection under 35 U.S.C. §102(b)**

Claims 1-3, 5-7, 10-11, 15-16, and 18 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,810,576 to Gaa, *et al.* ("Gaa"). The Examiner asserts that Gaa discloses a method of making a chopped strand mat that includes the step of dispersing chopped strand glass in white water. It is asserted that the chopped strand glass fibers are dried after sizing with a liquid that includes an organosilane and a film former. Additionally, it is asserted that the fibers are formed into a web on a forming wire where a binder is applied and the web heat treated.

In response to this rejection, Applicant respectfully directs the Examiner's attention to the amendments made to claim 1 and submits that claim 1, as amended, defines a process for preparing a chopped strand mat that is not taught (or suggested) by Gaa. Specifically, Applicant respectfully submits that there is no teaching (or suggestion) within Gaa of sizing

strands that contain an assembly of contiguous filaments with a sizing liquid that includes an organosilane and a film former to form sized strands as claimed in claim 1. In Gaa, an aqueous treating composition is applied to glass fibers after they are formed and during their attenuation. (*See, e.g.*, column 11, lines 49-53). Indeed, the aqueous chemical composition is on a substantial portion of the glass fibers in the strand. (*See, e.g.*, column 4, lines 60-64). Once the glass fibers of Gaa are treated with the treating composition, the fibers are then either chopped or gathered into strands and then chopped. (*See, e.g.*, column 11, lines 58-63).

In addition, Applicant respectfully submits that there is no teaching (or suggestion) within Gaa of forming a web by passing a white water dispersion containing chopped strands over a forming wire where the chopped strands are retained on the forming wire. Gaa specifically teaches placing the chopped glass fibers into water to form a dispersion of glass fibers for use in a wet-laid process. (*See, e.g.*, column 12, lines 11-17). Thus, in Gaa, individual fibers are dispersed in the water dispersion, not chopped strands as claimed in claim 1. Moreover, the dispersion of glass fibers in Gaa forms a non-woven sheet-like mat, which, Applicant submits, is vastly different from the chopped strand mat of the present invention. (*See, e.g.*, column 13, lines 8-10 and 46-50).

In order for a reference to be anticipatory, each and every element of the claimed invention must be found within the four corners of the cited reference. Applicant respectfully submits that Gaa does not teach (or suggest) the application of a sizing composition to glass strands or forming a web by passing a white water dispersion containing chopped strands over a forming wire where the chopped strands are retained on the forming wire as is required by amended claim 1. Thus, Applicant submits that Gaa is not an anticipatory reference. Accordingly, Applicant submits that independent claim 1, and all claims dependent therefrom, are not anticipated by Gaa and respectfully requests reconsideration and withdrawal of this rejection.

#### **Rejection under 35 U.S.C. §103(a)**

Claim 4 has been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,810,576 to Gaa, *et al.* ("Gaa") as applied to claims 1-3, 5-7, 10-11, 15-16, and 18 above, and further in view of Vinamul 8837 ("Vinamul") product specification. It is asserted that although Gaa discloses employing a film forming agent which may include a PVA polymer, Gaa does not disclose the claimed molecular weight and solubility of the film

former. In this regard, Vinamul is cited for assertedly teaching a PVA film forming polymer that is specifically designed for use in chopped strand mats that has the claimed molecular weight and solubility. The Examiner concludes that it would have been obvious to one of skill in the art to have employed the film former of Vinamul in the aqueous composition of Gaa based on its art recognized suitability for this purpose.

In response to this rejection, Applicant respectfully directs the Examiner's attention to the amendments made to claim 1 and submits that claim 1, as amended, defines a process for preparing a chopped strand mat that is not taught or suggested within Gaa and/or Vinamul. Applicant respectfully submits that Gaa does not teach or suggest sizing strands formed of an assembly of contiguous filaments with a sizing liquid that includes an organosilane and a film former to form sized strands as required by claim 1. As taught in Gaa, individual glass fibers are treated with an aqueous chemical dispersion as they are formed and during their attenuation into a strand. (*See, e.g.*, column 3, lines 47-50 and column 11, lines 49-53). Gaa also teaches that the aqueous chemical treating composition is on a substantial portion of the glass fibers in the strand. (*See, e.g.*, column 4, lines 60-64). Applicant submits that this application of an aqueous chemical treating composition to the individual glass fibers in Gaa is very different from the application of a sizing liquid to glass strands formed of an assembly of contiguous fibers as claimed in claim 1. Indeed, the application of an aqueous composition to individual fibers is the opposite of applying a sizing liquid to strands formed of contiguous filaments. Vinamul is silent with respect to any teaching or suggestion of the sizing of glass fibers or strands of contiguous filaments, and therefore adds nothing to the teaching of Gaa to result in the inventive process claimed in claim 1.

Additionally, Applicant respectfully submits that Gaa does not teach or suggest forming a web by passing a white water dispersion containing chopped strands over a forming wire where the chopped strands are retained on the forming wire. Gaa specifically teaches placing chopped glass fibers into water (with or without dispersing aids) to form a dispersion of glass fibers for use in a wet-laid process. (*See, e.g.*, column 12, lines 11-17). Thus, in Gaa, individual glass fibers are dispersed in the water, not chopped strands as claimed in claim 1. Moreover, the dispersion of glass fibers in Gaa forms a non-woven sheet-like mat, which, Applicant submits, is vastly different from the chopped strand mat of the present invention. (*See, e.g.*, column 13, lines 8-10 and 46-50). In particular, the mat of Gaa is an assembly of individual fibers whereas in claim 1, chopped strands are retained on the

forming wire to form a web of chopped strands. The web of chopped strands is then treated with a binder and heat treated to form a chopped strand mat. Accordingly, chopped strands are present in the chopped strand mat formed by the process of claim 1, not glass filaments as taught in Gaa. Indeed, it is the aim of the present invention to minimize the number of individual filaments in the mat. (*See, e.g.*, page 1, lines 10-15). Vinamul is silent with respect to any teaching or suggestion of forming a chopped strand mat. As such, Vinamul does not make up for the deficiencies of Gaa. Additionally, Applicant respectfully submits that the combination of the teachings of Gaa and Vinamul would not result in the inventive process of forming a chopped strand mat recited in claim 1. As such, Applicant submits that claim 1 is non-obvious and patentable over Gaa and Vinamul.

Further, Applicant respectfully submits that Gaa teaches away from the process recited in claim 1. It is respectfully submitted that one of skill in the art reading Gaa would be led away from applying a sizing liquid to a strand, as Gaa specifically teaches the application of an aqueous composition to glass fibers. Also, Applicant respectfully submits that one ordinarily skilled in the art would be led away from forming a chopped strand mat since Gaa teaches the formation of a dispersion of glass filaments to form a nonwoven sheet-like mat. As such, it is respectfully submitted that claim 1 patentable for these additional reasons.

In addition, Applicant respectfully submits that there is no motivation for one of skill in the art to arrive at a process for preparing a chopped strand mat as claimed in claim 1 based on the teachings of Gaa and Vinamul. To establish a *prima facie* case of obviousness, there must be some motivation, either within the reference or in the knowledge of those of skill in the art, to modify the reference or combine the references' teachings, there must be a reasonable expectation of success, and the prior art references must meet all of the claim limitations. (*See, e.g., Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 3, August 2005, §2142). It is respectfully submitted that one of ordinary skill in the art would have no motivation to arrive a method for forming a chopped strand mat that (1) adds a sizing liquid to strands formed of contiguous fibers and (2) forming a web by passing a white water dispersion over a forming wire where the chopped strands are retained on a forming wire to form a web of chopped strands based on the teachings of Gaa and Vinamul because Gaa and Vinamul simply do not teach or suggest a method in which a sizing liquid is applied to strands of contiguous filaments or the formation of a web of

chopped strands. Gaa specifically teaches the application of an aqueous composition to individual fibers and the formation of nonwoven sheet-like mat. Indeed, Gaa teaches away from the process of claim 1. Vinamul is silent with respect to any teaching or suggestion of the application of a sizing liquid or the formation of a chopped strand mat. Without some teaching or suggestion, there can be no motivation, and without motivation, there can be no *prima facie* case of obviousness.

In view of the above, it is respectfully submitted that independent claim 1 is not taught or suggested by Gaa and Vinamul and that claim 1 is therefore non-obvious and patentable. With respect to dependent claim 4, Applicant submits that because independent claim 1 is not taught or suggested by Gaa and/or Vinamul and because claim 4 is dependent upon claim 1 and contains the same elements as claim 1, dependent claim 4 is also not taught or suggested by Gaa and/or Vinamul.

In light of the above, Applicant submits that claim 4 is not obvious over Gaa in view of Vinamul and respectfully requests reconsideration and withdrawal of this rejection.

**Rejection under 35 U.S.C. §103(a)**

Claims 8 and 9 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,810,576 to Gaa, *et al.* ("Gaa") as applied to claims 1-3, 5-7, 10-11, 15-16, and 18 above, and further in view of U.S. Patent No. 4,526,914 to Dolin ("Dolin"). The Examiner admits that Gaa does not teach the use of a thickener. It is asserted, however, that Dolin teaches that it is desired that the viscosity of white water be between 1-12 cps, which corresponds to the claimed range. The Examiner concludes that it would have been obvious to one of skill in the art to have added the thickener disclosed by Gaa in amounts to produce the viscosity taught by Dolin because such values were taught in the art as desirable and conventional in forming white water dispersants.

In response to this rejection, Applicant respectfully directs the Examiner's attention to independent claim 1 and to the arguments set forth above with respect to the rejection of claim 4 under 35 U.S.C. §103(a) to Gaa in view of Vinamul and submits that claim 1 defines a process for preparing a chopped strand mat that is not taught or suggested within Gaa (and/or Vinamul). In addition, Applicant submits that the teachings of Dolin do not add to the Examiner's rejection so as to make claim 1 unpatentable. Even with the addition of the teachings of Dolin, Gaa still does not teach or suggest a method for forming a chopped strand

mat that (1) adds a sizing liquid to strands formed of contiguous fibers and (2) forms a web by passing a white water dispersion over a forming wire where the chopped strands are retained on the forming wire to form a web of chopped strands as claimed in amended claim 1. As such, it is submitted that the combination of Gaa and Dolin does not teach or suggest Applicant's invention as recited in claim 1. Because claims 8 and 9 are dependent upon claim 1, which, as discussed in detail above, is not taught or suggested by Gaa and Dolin, Applicant submits that claims 8 and 9 are also not taught or suggested by Gaa and/or Dolin.

In view of the above, Applicant respectfully submits that claims 8 and 9 are non-obvious and patentable over the combination of Gaa and Dolin and respectfully requests that the Examiner reconsider and withdraw this rejection.

**Rejection under 35 U.S.C. §103(a)**

Claim 12 has been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,810,576 to Gaa, *et al.* ("Gaa") as applied to claims 1-3, 5-7, 10-11, 15-16, and 18 above, and further in view of U.S. Patent No. 4,917,764 to Lalwani, *et al.* ("Lalwani"). The Examiner admits that Gaa does not teach the claimed temperature of the heating step. In this regard, Lalwani is cited for assertedly teaching that such heat treating steps are conventionally performed at temperatures from 100-400 °C. The Examiner concludes that it would have been obvious to one of skill in the art to have employed temperatures as taught by Lalwani in the method taught by Gaa because such temperatures were known in the art.

In response to this rejection, Applicant respectfully directs the Examiner's attention to independent claim 1 and to the arguments set forth above with respect to the rejection of claim 4 under 35 U.S.C. §103(a) to Gaa in view of Vinamul and submits that claim 1 defines a process for preparing a chopped strand mat that is not taught or suggested within Gaa (and/or Vinamul). In addition, Applicant submits that the teachings of Lalwani do not add to the Examiner's rejection so as to make claim 1 unpatentable. Even with the addition of the teachings of Lalwani, Gaa still does not teach or suggest a method for forming a chopped strand mat that (1) adds a sizing liquid to strands formed of contiguous fibers and (2) forms a web by passing a white water dispersion over a forming wire where the chopped strands are retained on the forming wire to form a web of chopped strands as claimed in amended claim 1. As such, it is submitted that the combination of Gaa and Lalwani does not teach or suggest Applicant's invention as recited in claim 1. Because claim 12 is dependent upon claim 1,

which, as discussed in detail above, is not taught or suggested by Gaa and Lalwani, Applicant submits that claim 12 is also not taught or suggested by Gaa and/or Lalwani.

In view of the above, Applicant respectfully submits that claim 12 is non-obvious and patentable over the combination of Gaa and Lalwani and respectfully requests reconsideration and withdrawal of this rejection.

**Rejection under 35 U.S.C. §103(a)**

Claims 13-14 and 17 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,810,576 to Gaa, *et al.* ("Gaa") as applied to claims 1-3, 5-7, 10-11, 15-16, and 18 above, and further in view of U.S. Patent No. 4,112,174 to Hannes, *et al.* ("Hannes"). The Examiner admits that Gaa does not disclose the basis weight of the mat or the claimed number of filaments. In this regard, Hannes is cited for assertedly teaching basis weights from 100-120 g/m<sup>2</sup> and strands having 1-300 filaments. The Examiner concludes that it would have been obvious to one of skill in the art to have employed the claimed number of filaments and to have formed mats having the claimed basis weights in view of the teachings of Hannes that such materials and weights were conventionally known and used.

In response to this rejection, Applicant respectfully direct the Examiner's attention to independent claim 1 and to the arguments set forth above with respect to the rejection of claim 4 under 35 U.S.C. §103(a) to Gaa in view of Vinamul and submits that claim 1 defines a process for preparing a chopped strand mat that is not taught or suggested within Gaa (and/or Vinamul). In addition, Applicant submits that the teachings of Hannes do not add to the Examiner's rejection so as to make claim 1 unpatentable. Even with the addition of the teachings of Hannes, Gaa still does not teach or suggest a method for forming a chopped strand mat that (1) adds a sizing liquid to strands formed of contiguous fibers and (2) forms a web by passing a white water dispersion over a forming wire where the chopped strands are retained on the forming wire to form a web of chopped strands as claimed in amended claim 1. As such, it is submitted that the combination of Gaa and Hannes does not teach or suggest Applicant's invention as recited in claim 1. Because claims 13-14 and 17 are dependent upon claim 1, which, as discussed in detail above, is not taught or suggested by Gaa and Hannes, Applicant submits that claims 13-14 and 17 are also not taught or suggested by Gaa and/or Hannes.

In view of the above, Applicant respectfully submits that claims 13-14 and 17 are non-obvious and patentable over the combination of Gaa and Hannes and respectfully requests reconsideration and withdrawal of this rejection.

**Conclusion**

In light of the above, Applicant believes that this application is now in condition for allowance and therefore requests favorable consideration.


If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

If necessary, the Commissioner is hereby authorized to charge payment or credit any overpayment to Deposit Account No. 50-0568 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

Date: \_\_\_\_\_

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